

In the Claims

1. **(Previously Presented)** A method comprising:
collecting dynamic status information on each of at least a subset of a plurality of nodes, each node comprising a switching fabric integrated to a card and at least two processors integrated to the card;
generating a plurality of graphical elements that convey at least some of the dynamic status information; and
communicating at least some of the graphical elements for display to a user, the display presenting at least one job space within at least one virtual cluster of nodes, the job space dynamically allocated to complete at least one job.
2. **(Previously Presented)** The method of Claim 1, wherein the display presents at least two job spaces within the at least one virtual cluster, each job space allocated to respective jobs.
3. **(Previously Presented)** The method of Claim 1, wherein:
dynamic status information on a node indicates a physical status of the node; and
the physical status of the node comprises one or more of:
 - processor utilization;
 - memory utilization;
 - physical location;
 - IP address; or
 - bandwidth.
4. **(Previously Presented)** The method of Claim 1, wherein at least some of the graphical elements collectively enable a view of a topology of at least the subset of the nodes, the switching fabrics of the nodes enabling the topology.

5. **(Previously Presented)** The method of Claim 4, further comprising:
 - receiving a job submission from the user, the job submission comprising at least one parameter;
 - communicating the job submission to a job scheduler for dynamic allocation of a particular subset of the nodes to the job submission; and
 - updating the view of the topology based on the dynamic allocation of the particular subset.

6. **(Previously Presented)** The method of Claim 5, further comprising:
 - communicating an interactive command to the job scheduler to increase a size of the particular subset; and
 - updating the view of the topology based on the increase.

7. **(Previously Presented)** The method of Claim 4, further comprising:
 - receiving a notification of a failure of one of the nodes; and
 - updating the view of the topology based on the notification.

8. **(Previously Presented)** Software encoded in one or more computer-readable tangible media and when executed operable to:

collect dynamic status information on each of at least a subset of a plurality of nodes, each node comprising a switching fabric integrated to a card and at least two processors integrated to the card;

generate a plurality of graphical elements that convey at least some of the dynamic status information; and

communicate at least some of the graphical elements for display to a user, the display presenting at least one job space within at least one virtual cluster of nodes, the job space dynamically allocated to complete at least one job.

9. **(Previously Presented)** The software of Claim 8, wherein the display presents at least two job spaces within the at least one virtual cluster, each job space allocated to respective jobs.

10. **(Previously Presented)** The software of Claim 8, wherein:

dynamic status information on a node indicates a physical status of the node; and the physical status of the node comprises one or more of:

processor utilization;

memory utilization;

physical location;

IP address; or

bandwidth.

11. **(Previously Presented)** The software of Claim 8, wherein at least some of the graphical elements collectively enable a view of a topology of at least the subset of the nodes, the switching fabrics of the nodes enabling the topology.

12. **(Previously Presented)** The software of Claim 11, further operable to:
receive a job submission from the user, the job submission comprising at least one parameter;
communicate the job submission to a job scheduler for dynamic allocation of a particular subset of the nodes to the job submission; and
update the view of the topology based on the dynamic allocation of the particular subset.

13. **(Previously Presented)** The software of Claim 12, further operable to:
communicate an interactive command to the job scheduler to increase a size of the particular subset; and
update the view of the topology based on the increase.

14. **(Previously Presented)** The software of Claim 11, further operable to:
receive a notification of a failure of one of the nodes; and
update the view of the topology based on the notification.

15. **(Previously Presented)** A system comprising:

a plurality of nodes, each node comprising a switching fabric integrated to a card and at least two processors integrated to the card; and

a client operable to:

collect dynamic status information on each of at least a subset of the nodes;

generate a plurality of graphical elements that convey at least some of the dynamic status information; and

communicate at least some of the graphical elements for display to a user, the display presenting at least one job space within at least one virtual cluster of nodes, the job space dynamically allocated to complete at least one job.

16. **(Previously Presented)** The system of Claim 15, wherein the display presents at least two job spaces within the at least one virtual cluster, each job space allocated to respective jobs.

17. **(Previously Presented)** The system of Claim 15, wherein:

dynamic status information on a node indicates a physical status of the node; and the physical status of the node comprises one or more of:

processor utilization;

memory utilization;

physical location;

IP address; or

bandwidth.

18. **(Previously Presented)** The system of Claim 15, wherein at least some of the graphical elements collectively enable a view of a topology of the at least the subset of the nodes, the switching fabrics of the nodes enabling the topology.

19. **(Previously Presented)** The system of Claim 18, the client further operable to:

receive a job submission from the user, the job submission comprising at least one parameter;

communicate the job submission to a job scheduler for dynamic allocation of a particular subset of the nodes to the job submission; and

update the view of the topology based on the dynamic allocation of the particular subset.

20. **(Previously Presented)** The system of Claim 19, the client further operable to:

communicate an interactive command to the job scheduler to increase a size of the particular subset; and

update the view of the topology based on the increase.

21. **(Previously Presented)** The system of Claim 18, the client further operable to:

receive a notification of a failure of one of the nodes; and

update the view of the topology based on the notification.

22. **(Previously Presented)** The method of Claim 1, wherein each card is a motherboard and comprises at least two host channel adapters.

23. **(Previously Presented)** The GUI of Claim 8, wherein each card is a motherboard.

24. **(Previously Presented)** The system of Claim 15, wherein each card is a motherboard.

25. **(Previously Presented)** A method comprising:
collecting dynamic status information on each of at least a subset of a plurality of nodes, each node comprising:

at least two first processors integrated to a first card and operable to communicate with each other via a direct link between them; and

a first switch integrated to the first card, the first processors communicably coupled to the first switch, the first switch operable to communicably couple the first processors to six or more second cards each comprising at least two second processors integrated to the second card and a second switch integrated to the second card operable to communicably couple the second processors to the first card and at least five third cards each comprising at least two third processors integrated to the third card and a third switch integrated to the third card;

the first processors being operable to communicate with particular second processors on a particular second card via the first switch and the second switch on the particular second card;

the first processors being operable to communicate with particular third processors on a particular third card via the first switch, a particular second switch on a particular second card between the first card and the particular third card, and the third switch on the particular third card without communicating via either second processor on the particular second card;

generating a plurality of graphical elements that convey at least some of the dynamic status information; and

communicating at least some of the graphical elements for display to a user, the display presenting at least one job space within at least one virtual cluster of nodes, the job space dynamically allocated to complete at least one job.

26. **(Previously Presented)** Software encoded in one or more computer-readable tangible media and when executed operable to:

collect dynamic status information on each of at least a subset of a plurality of nodes, each node comprising:

at least two first processors integrated to a first card and operable to communicate with each other via a direct link between them; and

a first switch integrated to the first card, the first processors communicably coupled to the first switch, the first switch operable to communicably couple the first processors to six or more second cards each comprising at least two second processors integrated to the second card and a second switch integrated to the second card operable to communicably couple the second processors to the first card and at least five third cards each comprising at least two third processors integrated to the third card and a third switch integrated to the third card;

the first processors being operable to communicate with particular second processors on a particular second card via the first switch and the second switch on the particular second card;

the first processors being operable to communicate with particular third processors on a particular third card via the first switch, a particular second switch on a particular second card between the first card and the particular third card, and the third switch on the particular third card without communicating via either second processor on the particular second card;

generate a plurality of graphical elements that convey at least some of the dynamic status information; and

communicate at least some of the graphical elements for display to a user, the display presenting at least one job space within at least one virtual cluster of nodes, the job space dynamically allocated to complete at least one job.

27. **(Previously Presented)** A system comprising:

a plurality of nodes, each node comprising:

at least two first processors integrated to a first card and operable to communicate with each other via a direct link between them; and

a first switch integrated to the first card, the first processors communicably coupled to the first switch, the first switch operable to communicably couple the first processors to six or more second cards each comprising at least two second processors integrated to the second card and a second switch integrated to the second card operable to communicably couple the second processors to the first card and at least five third cards each comprising at least two third processors integrated to the third card and a third switch integrated to the third card;

the first processors being operable to communicate with particular second processors on a particular second card via the first switch and the second switch on the particular second card;

the first processors being operable to communicate with particular third processors on a particular third card via the first switch, a particular second switch on a particular second card between the first card and the particular third card, and the third switch on the particular third card without communicating via either second processor on the particular second card; and

a client operable to:

collect dynamic status information on each of at least a subset of the nodes;

generate a plurality of graphical elements that convey at least some of the dynamic status information; and

communicate at least some of the graphical elements for display to a user, the display presenting at least one job space within at least one virtual cluster of nodes, the job space dynamically allocated to complete at least one job.